

ABSTRACT OF THE DISCLOSURE

A method for fabricating a low temperature polysilicon thin film transistor. The method includes steps of: first, a substrate is provided and a buffer layer is then formed over the substrate. Next, a low surface energy material layer is formed over the buffer layer and then a first amorphous silicon layer is formed on the low surface energy material layer. or on a buffer layer processed by hydrogen plasma. The first amorphous silicon layer is completely melted by a laser annealing step so that the liquid first amorphous silicon layer sequentially transforms into a number of polysilicon seeds being uniformly distributed on the low surface energy material layer. A second amorphous silicon layer is further formed over the low surface energy material layer and covers the polysilicon seeds. The laser annealing step s The second amorphous silicon layer is completely melted after the laser annealing step so that the liquid second amorphous silicon layer sequentially transforms into a polysilicon layer with the associated polysilicon seeds during crystallization.

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